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Original Research

Practices of community pharmacists during the COVID-19 pandemic: potential barriers and views on providing pharmacy services in Thailand

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Abstract

Background: Community pharmacists have played an essential health service role during the Coronavirus Disease 2019 (COVID-19) outbreak. Practices of community pharmacists against the pandemic may differ based on the specific guidance and level of preparedness in each country. **Objective:** This study explored the roles of community pharmacists in disease prevention, the provision of counseling services, and the supply of medications and preventive devices as well as the potential barriers and attitudes of community pharmacists towards COVID-19 infection. **Methods:** This cross-sectional study was conducted over three months (December 2021- March 2022). Online self-administered questionnaires were distributed to the community pharmacists across Thailand. **Results:** Of the 835 questionnaires distributed, 339 were completed (40.6%). Almost all respondents provided alcohol sanitizers inside their pharmacies (99.1%) and advised patients about how to use Antigen Test Kits (ATK) and interpret their ATK results (98.5%). The majority of respondents also provided advice to customers about ATK screening (97.6%). Respondents in chain pharmacies were more likely to provide encouragement to customers to keep social distancing ($p<0.01$), use preventive devices ($p=0.004$), and provide telepharmacy consulting services ($p<0.01$). Concern about contracting COVID-19 while working was the most common barrier to providing care cited by respondents (77.6%). Respondents had positive overall attitudes towards providing COVID-related counseling and believed that training programs and information support were important to the provision of COVID-19 care (82.6% and 64.6% agreed with the respective statements). **Conclusion:** Our findings reveal good practices among Thai community pharmacists on providing pharmacy services during the pandemic. Information support and training programs about COVID-19 from the Thai health authorities should be developed to improve the quality of pharmacy service..

Keywords: community pharmacists; practices; barriers; attitudes; COVID-19 pandemic

INTRODUCTION

Since late 2019, the world has been confronted with a global crisis due to the outbreak of the 2019 Coronavirus Disease (COVID-19), which is caused by a novel human coronavirus known as SARS-CoV-2.[1] COVID-19 is primarily transmitted among individuals through respiratory droplets, which are dispersed through coughing, sneezing, nasal discharge, and saliva.[1,2] As of August 2021, the cumulative global reported cases had reached nearly 216 million, resulting in approximately 4.5 million deaths.[3]

The COVID-19 pandemic represents a significant global health crisis that challenges health authorities and healthcare professionals. The COVID-19 crisis has had a direct and significant impact on Thailand's healthcare system, resulting from over 1.5 million confirmed cases and a total of 16,620 deaths as of August 2021.[4] The Ministry of Public Health has diligently issued comprehensive guidelines specifically aimed at mitigating the widespread transmission of COVID-19 focusing on medical practices, care, and preventive measures.[5] Self-isolation measures are strongly advocated to minimize the potential for further contagion.[5,6] Moreover, certain medications such as favipiravir, lopinavir/ritonavir, and remdesivir have been approved for the treatment of COVID-19-infected patients, while traditional herbal remedies are an option for managing mild COVID-19 infection.[5,7]

Healthcare professionals play a pivotal role in preventing and controlling COVID-19 infections mainly through assessing and providing medical care to patients infected with the virus. The role of pharmacists in this process is significant; supplying medicines and preventative devices, providing drug information and medication counseling, and monitoring adverse reactions associated with COVID-19 medications.[8] The International Pharmaceutical Federation has published a document outlining the responsibilities of community pharmacists, which includes ensuring an adequate supply of pharmaceutical products and devices, providing counseling and COVID-19 information to the public, promoting disease prevention, and referring infected patients as necessary.[9]

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The role of community pharmacists in addressing COVID-19 has been investigated in various countries. In China, community pharmacists take measures to ensure an adequate supply of COVID-19-related medications and preventive products.[10] In the United States, community pharmacists play an active role in the COVID-19 testing process.[11] Similarly, in Colombia, community pharmacists provide customers with information about COVID-19 and actively participate in screening and referring potentially infected patients to relevant agencies through telephone communication.[12]

The general public's attitudes towards community pharmacy services during the COVID-19 outbreak have been generally positive.[13] However, community pharmacists have faced numerous challenges while providing healthcare services during this pandemic. These challenges include a lack of support and recognition from health authorities, as well as high demand and increased prices for antivirals, vitamins, and preventive devices.[14,15] These challenges may differ depending on the practical guidance and level of preparedness against the pandemic in each country. In Thailand, studies about the practices, potential barriers, and attitudes of community pharmacists in relation to COVID-19 infection are limited. Therefore, the objective of this study was to assess the responsibilities of community pharmacists in preventing COVID-19 infections, delivering counseling services, and providing preventive devices. Additionally, the study aimed to explore the potential barriers and attitudes of community pharmacists toward COVID-19 infection.

METHODS

Study design

This study was a cross-sectional survey using a self-completed, online questionnaire, carried out from December 2021 to March 2022. The study was approved by the Ethics Committee of the Khon Kaen University Ethics Committee for Human Research (Number HE642270).

Participants and sample size

The study included full-time or part-time community pharmacists working in either independent or chain pharmacies. Pharmacists without internet access and those who completed less than 30% of the questionnaire were excluded from the study. The sample size for the study was calculated using the Cochran formula with a 5% error margin.[16] Based on previous studies indicating that approximately two-thirds of community pharmacists were involved in counseling activities related to COVID-19 infection,[17,18] and considering a valid response rate of 42.9% from a previous postal survey conducted in Thailand,[19] a total of 800 community pharmacists were required for this study.

Questionnaire development and testing

A self-administered questionnaire was developed based on previous relevant studies.[18,20-22] The questionnaire consisted of four sections:

Section 1: Closed questions about socio-demographic characteristics of community pharmacists including gender, age, location, working experience, type of pharmacy store, working hours, number of patients/clients per day, and training experience on COVID-19 infection.

Section 2: Closed questions about the practices of community pharmacists during COVID-19 pandemic including disease protection, supply management, and counseling services.

Section 3: Closed and open questions about problems and barriers relating to pharmaceutical care services during COVID-19 pandemic.

Section 4: Attitudes towards pharmaceutical care during COVID-19 pandemic. Attitude questions were measured using 5 positive and 5 negative items on a 5-point Likert-type Scale: absolutely disagree (1), disagree (2), not sure (3), agree (4), absolutely agree (5). Expectation questions were measured by 8 closed questions with multiple answers.

The questionnaire was assessed for content validity by three experts using the index of item objective congruence (IOC) technique. All questions in the questionnaire passed the content validity testing with an IOC > 0.5 for each item.

Data collection

The online questionnaire was created using Google Documents. A preliminary test for the online questionnaire was conducted with ten community pharmacists to ensure that the questionnaire was appropriate. An invitation letter containing the study's aims with a QR code and a URL for the questionnaire was distributed via post and social media platforms to community pharmacists by purposive sampling. Non-responders were reminded to complete the questionnaire by phone 2 – 3 weeks after distribution.

Data analysis

All questionnaire responses were analyzed using SPSS for Windows version 28.0. Percentage, mean and standard deviation (SD) were used to describe demographic data, practices of community pharmacists, barriers, and attitudes towards pharmaceutical care during COVID-19 pandemic. Attitude scores were calculated by reverse scoring responses to negative questions and summing scores. The scores were then classified into three equal categories: poor (10 – 22 points), moderate (23 – 36 points), and good attitudes (37 – 50 points). Pearson Chi-square or Fisher's exact test were used to compare subgroups for categorical data, and independent-sample t-tests or ANOVA were used for continuous variables with normal distributions.

RESULTS

Response rate and demographic data

A total of 835 questionnaires were distributed, of which 339 were fully completed and analyzed. The total response rate was 40.6%, which was comprised of 179 from independent pharmacies (52.8%) and 160 from chain pharmacies (47.2%).

Around two-thirds of the respondents were female (N = 226, 66.7%). The average age was 38.9 ± 11.30 years. The highest percentage of pharmacy stores were from the central and northeastern areas. The majority of pharmacies had received certification as Quality Community Pharmacies from the Pharmacy Council of Thailand. Most pharmacists worked on a full-time basis. Around half of the respondents had participated in academic training or conferences related to COVID-19. A significant difference was found in weekly working time and work experience between the respondents working in different types of drugstores. The respondents from independent pharmacies had longer working times and more working experience compared to the pharmacists from chain pharmacies (p<0.001) (Table 1).

Practices in relation to the prevention of COVID-19 transmission and the provision of COVID-related advice

For practices regarding the prevention of COVID-19 transmission, almost all respondents (99.1%) encouraged the use of alcohol sanitizer in the pharmacy store. A majority of pharmacists (97.6%) also advised customers with COVID-related symptoms such as fever, cough, sneezing, and runny nose, or those who had been in contact with COVID-19 patients to undergo screening using Antigen Test Kits (ATK). Furthermore, 95.0% of respondents reported that they advised customers who tested positive for COVID-19 infection to self-isolate at home. The proportions of respondents who encouraged customers to keep social distancing of one meter from others and advised the use

Table 1. Demographic characteristics of community pharmacists classified by types of pharmacy store

Demographic characteristics of community pharmacists	Type of pharmacy store [N (%)]		Total (N, %) (N=339)	p-value
	Independent pharmacy (N = 179)	Chain pharmacy (N = 160)		
Gender				**<0.001[a]**
- Male	74 (41.3)	39 (24.4)	113 (33.3)	
- Female	105 (58.7)	121 (75.6)	226 (66.7)	
Age groups (years)				**<0.001[a]**
- ≤ 30	13 (7.3)	72 (45.0)	85 (25.1)	
- 31-35	45 (25.1)	44 (27.5)	89 (26.3)	
- 36-40	23 (12.8)	26 (16.3)	49 (14.5)	
- 41-45	24 (13.4)	8 (5.0)	32 (9.4)	
- ≥ 46	74 (41.3)	10 (6.3)	84 (24.8)	
Mean (SD)	44.2 (11.65)	32.9 (7.20)	38.9 (11.30)	**<0.001[b]**
Educational level				**<0.001[a]**
- Bachelor's degree	125 (69.8)	141 (88.1)	266 (78.5)	
- Master's degree or more	54 (30.2)	19 (11.9)	73 (21.5)	
Regions				
- Northern	22 (12.3)	19 (11.9)	41 (12.1)	**<0.001[a]**
- Northeastern	48 (26.8)	29 (18.1)	77 (22.7)	
-Central	41 (22.9)	50 (31.3)	91 (26.8)	
-Eastern	21 (11.7)	42 (26.3)	63 (18.6)	
-Western	11 (6.1)	9 (5.6)	20 (5.9)	
-Southern	36 (20.1)	11 (6.9)	47 (13.9)	
Location				
- Urban	72 (40.2)	63 (39.4)	135 (39.8)	0.873[a]
- Suburban and rural area	107 (59.8)	97 (60.6)	204 (60.2)	
Years in practice				**<0.001[a]**
- ≤ 5	26 (14.5)	88 (55.7)	114 (33.8)	
- 6-14	77 (43.0)	54 (34.2)	131 (38.9)	
- ≥ 15	76 (42.5)	16 (10.1)	92 (27.3)	
Mean (SD)	15.14 (10.24)	7.03 (6.25)	11.34 (9.450)	**<0.001[b]**
Community pharmacy accreditation*				**<0.001[a]**
- Good Pharmacy Practice	107 (60.8)	125 (78.1)	232 (69.5)	

- Certified Quality Community Pharmacies	118 (67.0)	138 (86.3)	256 (76.6)	**<0.001**[a]
- Community Pharmacy Services under the National Health Security Scheme	64 (36.2)	46 (28.8)	110 (32.9)	0.187[a]
Job position				**<0.001**[a]
- Pharmacist and owner	140 (78.2)	12 (7.5)	152 (44.8)	
- Pharmacist	39 (21.8)	148 (92.5)	187 (55.2)	
Working patterns				**0.048**[a]
- Full time	155 (86.6)	149 (93.1)	304 (89.7)	
- Part time	24 (13.4)	11 (6.9)	35 (10.3)	
Daily work times				**<0.001**[a]
- < 12 hours	82 (47.4)	109 (71.2)	191 (58.6)	
- ≥ 12 hours	91 (52.6)	44 (28.8)	135 (41.4)	
Mean ± SD	10.45 ± 3.277	10.30 ± 2.344	10.38 ± 2.874	0.628[b]
Weekly work times				**<0.001**[a]
- ≤ 5 days	25 (14.5)	86 (57.0)	111 (34.3)	
- > 5 days	148 (85.5)	65 (43.0)	213 (65.7)	
Mean ± SD	6.28 ± 1.053	5.37 ± 0.892	5.86 ± 1.081	**<0.001**[b]
Number of consumers per day				**<0.001**[a]
- ≤ 30	37 (20.8)	25 (15.9)	62 (18.5)	
- 31-60	65 (36.5)	33 (21.0)	98 (29.3)	
- 61-90	39 (21.9)	24 (15.3)	63 (18.8)	
- > 90	37 (20.8)	75 (47.8)	112 (33.4)	
Participating in academic training or conferences related to COVID-19				0.403[a]
- Yes	96 (53.9)	78 (49.4)	174 (51.8)	
- No	82 (46.1)	80 (50.6)	162 (48.2)	

[a]Pearson's chi-squared Test; [b]Independent t-test; *Multiple answer; Bold numbers of p-value indicate statistical significance at p<0.05.

of face masks or gloves to prevent COVID-19 transmission were higher among those working in chain pharmacies than those working in independent pharmacies (88.8% vs 66.9%, p<0.01 and 95.6% vs 86.5%, p=0.004, respectively).

A majority of respondents also reported giving advice regarding the proper use of ATK and interpretation of the result (98.5%), providing general information and self-management about COVID-19 infection (96.2%), and providing information about side effects of COVID-19 vaccines and how to manage these symptoms (94.7%). Respondents who worked in independent pharmacies encouraged adults with high risks of severe infection to get COVID-19 vaccination more than those who worked in chain pharmacies (87.2% vs 77.5%, p=0.019). Around one-third of respondents (36.0%) reported providing telepharmacy consulting services for COVID-infected patients, with a higher proportion of those who worked in chain pharmacies providing this service compared to those who worked in independent pharmacies (44.4% vs 28.5%, p=0.002) (Table 2).

Provision of preventive devices and supplements for COVID-19 infection

Almost all respondents reported that they had provided COVID-19 preventive devices (99.7%), vitamins and herbal supplements (98.8%), and nasal and saliva-ATK (99.4%). Face masks were the most supplied preventive products, followed by alcohol sanitizer, and hand soap (Figure 1a). Customers purchased several products for the prevention of COVID-19 infection and as immune boosters. The most supplied vitamin products were zinc, vitamin C, and multivitamins while Andrographis and finger root extract were the most supplied herbal supplements (Figure 1b). Finger root extract, vitamin B complex, vitamin D, multivitamin, zinc, and protein were supplied more frequently in chain drugstores compared to independent drugstores (p<0.001).

Potential barriers to providing services related to COVID-19 infection

The potential barriers to providing COVID-19-related services that were most frequently reported by respondents were; pharmacists' concerns about contracting COVID-19 while working (n=263, 77.6%), the increased prices of medications and preventive devices (n=212, 62.5%), and customers' fears of the COVID-19 pandemic (n=195, 57.7%). The proportion of respondents citing increased prices for medications and preventive devices related to COVID-19 infection as a potential barrier was higher among independent pharmacies than chain pharmacies (p=0.003) (Table 3).

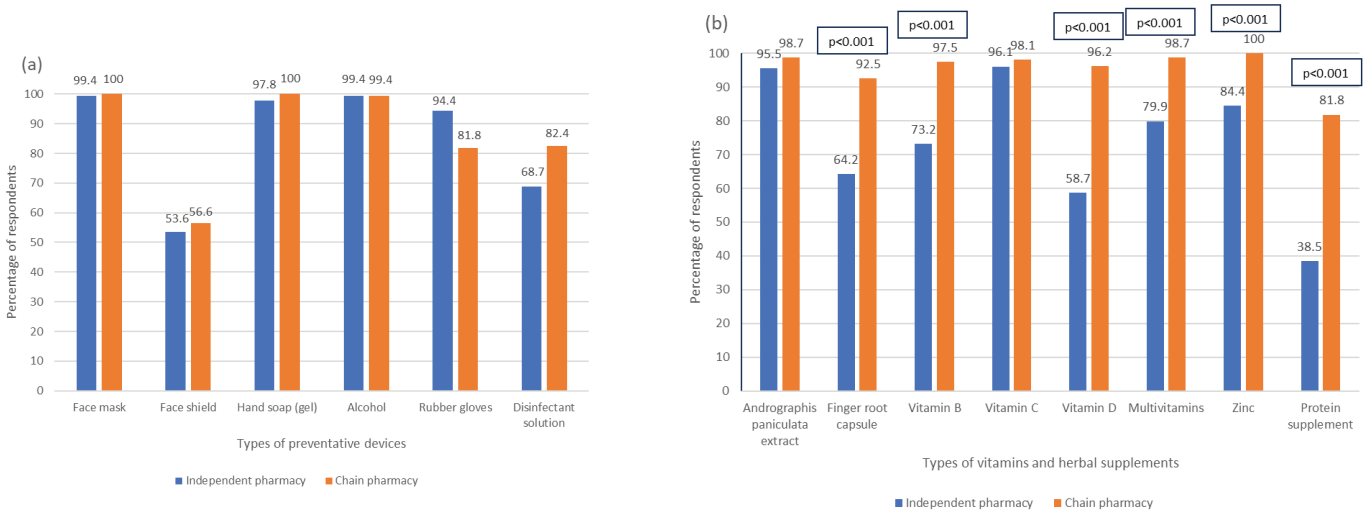

Figure 1. Provision of respondents relating to COVID-19 preventative devices and supplements (a) Percentage of respondents who distributed preventative devices of COVID-19; (b) Percentage of respondents who dispensed vitamin and herbal supplements for immune boosting

Table 2. Practices of respondents in relation to prevention the spread of COVID-19 and provision of COVID-related counseling

Practices	Type of pharmacy store [N (%)]		Total N (%)	p-value
	Independent pharmacy (N = 179)	Chain pharmacy (N = 160)		
1. Encouraging social distancing of one meter from others.	119 (66.9)	142 (88.8)	261 (77.2)	**<0.01[a]**
2. Encouraging use of alcohol sanitizer in the pharmacy store.	176 (98.9)	159 (99.4)	335 (99.1)[1]	1.000[b]
3. Advice proper use of hand soap, alcohol gel, and disinfectant solution.	159 (89.3)	140 (87.5)	299 (88.5)	0.600[a]
4. Advice the use of surgical mask or rubber gloves to prevent COVID-19 infection.	154 (86.5)	153 (95.6)	307 (90.8)	**0.004[a]**
5. Limitation of self-service area to reduce the risk of infection.	165 (92.7)	147 (91.9)	312 (92.3)	0.777[a]
6. Advice self-isolating at home if customers get COVID-19 infection.	167 (93.8)	154 (96.3)	321 (95.0)[5]	0.307[a]
7. Advice screening COVID-19 infection by Antigen Test Kit if customers have COVID-related symptoms or contact with infected patients.	174 (97.8)	156 (97.5)	330 (97.6)[2]	1.000[a]
8. Screening or assessing customers' risk of CIVID-19 infection.	145 (81.0)	137 (85.6)	282 (83.2)	0.256[a]
9. Providing general information and management about COVID-19 infection to customers.	170 (95.0)	156 (97.5)	326 (96.2)[4]	0.226[a]
10. Having telepharmacy consulting services for COVID-infected patients.	51 (28.5)	71 (44.4)	122 (36.0)	**0.002[a]**
11. Providing information about COVID-19 vaccination.	159 (88.8)	140 (87.5)	299 (88.2)	0.705[a]
12. Encouraging adults with high risks of severe infection to get vaccinated for COVID-19.	156 (87.2)	124 (77.5)	180 (82.6)	**0.019[a]**
13. Providing information about side effects of COVID-19 vaccines and how to manage these symptoms.	172 (96.1)	149 (93.1)	321 (94.7)	0.224[a]
14. Monitoring of any adverse reactions after COVID-19 vaccination.	82 (45.8)	81 (50.6)	163 (48.1)	0.376[a]
15. Providing information about receiving COVID-19 vaccines with other vaccines.	119 (66.5)	102 (63.7)	221 (65.2)	0.598[a]
16. Advice patients with special conditions about what to do before COVID-19 vaccination.	142 (79.3)	116 (72.5)	258 (76.1)	0.141[a]
17. Providing information about COVID-19 vaccination for children, elderly, people who are pregnant or breastfeeding.	142 (79.3)	120 (75.0)	262 (77.3)	0.342[a]
18. Advice proper use and interpreting the result of Antigen test kit.	175 (97.8)	159 (99.4)	334 (98.5)[3]	0.375[b]

[a] Pearson's chi-squared Test; [b] Fisher's exact test; Bold numbers of p-value indicate statistical significance at p<0.05.

Table 3. Potential barriers of respondents in relation to providing pharmacists' services related to COVID-19 infection

Barriers	Type of pharmacy store [N (%)]		Total (N=339) [N (%)]	p-value[a]
	Independent pharmacy (N = 179)	Chain pharmacy (N = 160)		
1. Pharmacists are worried about getting COVID-19 while working.	134 (74.9)	129 (80.6)	263 (77.6)	0.204
2. Customers are frightened with COVID-19 pandemic.	101 (56.4)	94 (58.8)	195 (57.7)	0.665
3. Lack of adequate and reliable information about COVID-19 infection.	55 (30.7)	51 (31.9)	106 (31.3)	0.820
4. Shortage of medical supply during the COVID-19 pandemic.	57 (31.8)	51 (31.9)	108 (31.9)	0.995
5. Price increasing of medication and preventive supply related to COVID-19 infection.	125 (69.8)	87 (54.4)	212 (62.5)	**0.003**
6. Increasing in cost due to preventive measures of COVID-19.	113 (63.1)	77 (48.1)	190 (56.0)	0.050
7. Pharmacists are worried about not receiving compensation during the COVID-19 pandemic.	40 (22.3)	42 (26.3)	82 (24.2)	0.402
8. Lack of supports from relevant organizations.	68 (38.0)	62 (38.8)	130 (38.3)	0.886
9. Lack of COVID-19 training program for community pharmacists.	62 (34.6)	68 (42.5)	130 (38.3)	0.137
10. Lack of adequate time for COVID-19 counseling to customers.	43 (24.0)	40 (25.0)	83 (24.5)	0.834
11. Others*	6 (3.4)	1 (0.6)	7 (2.1)	0.078

[a] Pearson's chi-squared Test; *Others: not contact with relevant agencies (n=2), customers are afraid of being justified as infected patients (n=1), not indicated (n=4); Bold numbers of p-value indicate statistical significance at p<0.05.

Pharmacists' attitudes and expectations towards providing COVID-related counseling services

The overall mean attitude score was 36.22 ± 4.16. Around half of the respondents (54.0%) had a moderate attitude score (mean=33.2, SD=2.12). The remaining 155 (45.7%) respondents had a good attitude score (mean=39.9, SD=2.32).

A majority of respondents agreed that community pharmacists should pay attention to COVID-19-related pharmaceutical services (n=288, 84.9%) and that community pharmacists can reduce the spread of COVID-19 within the community (n=282, 83.2%). Respondents also agreed that information support about COVID-19 from relevant agencies was insufficient (n=219, 64.6%) and that training programs to enhance knowledge of COVID-19 should be supported (n=280, 82.6%). Around three-quarters of respondents disagreed with the statement that providing counseling services related to COVID-19 was a waste of time (n=256, 75.6%). Around half of the respondents disagreed with the statements that customers encountered challenges in obtaining COVID-19-related services from community pharmacists (n=179, 52.8%) and that the role of community pharmacists regarding COVID-19 was not fully recognized by customers (n=174, 51.4%) (Table 4).

DISCUSSION

Practices in relation to COVID-19 outbreak

This study examined the roles of community pharmacists in preventing COVID-19 infection, providing pharmaceutical care services, and supplying preventive medications and devices. The majority of respondents in our study were full-time pharmacists with a working experience of five years or more, which aligns with findings from previous studies.[18,20,21] During the COVID-19 outbreak, community pharmacists implemented various preventive measures in their practice.[18,20,21,23] Our study revealed that most pharmacists were aware of infection control measures that were recommended by the Thailand Ministry of Public Health to prevent the transmission of COVID-19 in community and healthcare settings including social distancing, mask-wearing, hand washing, and COVID-19 screening tests. Moreover, community pharmacists working in chain pharmacies showed a higher level of awareness and preparedness for COVID-19 infection control compared to those working in independent pharmacies, which was similar to findings from a study conducted in Qatar.[21] This difference might be because chain pharmacies could implement contingency plans for emergency situations across all of their stores, while independent pharmacies could only conduct this type of proactive planning on a store-by-store basis.

In Thailand, a partnership of the National Health Security Office, the Public Health Ministry, and the Government Pharmaceutical Organization enacted a policy to distribute COVID-19 ATK to groups at risk of contracting the virus through community pharmacies.[24,25] As a result, community pharmacists have become a vital source of information regarding the proper use and interpretation of ATKs. Thai people collecting the test kits can also visit these pharmacies as walk-in patients for a risk assessment of COVID-19 infection. The community pharmacists in our study played a significant role in providing information about the treatment of COVID-19, the potential side effects of COVID-19 vaccines, and what to do if the side effects of COVID-19 vaccines occurred. This finding was similar to the previous studies highlighting the involvement of community pharmacists in providing advice on important issues related to COVID-19 vaccines.[26,27]

In the current study, the use of telepharmacy to provide pharmaceutical care services was found to be limited.

Table 4. Attitudes of community pharmacists towards pharmaceutical care services relating to COVID-19

Statements	Attitudes (N, %)					Mean (SD)
	Absolutely disagree	Disagree	Not sure	Agree	Absolutely agree	
1. The role of community pharmacists relating to COVID-19 was not fully recognized by customers as it should be.	47 (13.9)	127 (37.5)	89 (26.3)	41 (12.1)	35 (10.3)	2.68 (1.17)
2. Providing service relating to COVID-19 increases burdens for you.	30 (8.8)	80 (23.6)	104 (30.7)	81 (23.9)	44 (13.0)	3.09 (1.16)
3. You should have more knowledge and expertise about COVID-19.	3 (0.9)	5 (1.5)	72 (21.2)	157 (46.3)	102 (30.1)	4.03 (0.81)
4. Providing counseling service relating to COVID-19 is a waste of time for you.	87 (25.7)	169 (49.9)	59 (17.7)	14 (4.1)	10 (2.9)	2.09 (0.93)
5. Receiving financial support from the government could increase your motivation in your work.	17 (5.0)	35 (10.3)	99 (29.2)	84 (24.8)	104 (30.7)	3.66 (1.16)
6. The support and provision of information about COIVID-19 from relevant agencies is currently insufficient.	6 (1.8)	21 (6.2)	93 (27.4)	126 (37.2)	93 (27.4)	3.82 (0.96)
7. Training programs to enhance the knowledge of COVID-19 for community pharmacists should be supported.	1 (0.3)	3 (0.9)	55 (16.2)	151 (44.5)	129 (38.1)	4.19 (0.76)
8. Community pharmacists can reduce the spread of COVID-19 within the community.	3 (0.9)	5 (1.5)	49 (14.5)	113 (33.3)	169 (49.9)	4.30 (0.83)
9. Customers encounter challenges in obtaining COVID-19-related services from community pharmacists.	47 (13.9)	132 (38.9)	82 (24.2)	55 (16.2)	23 (6.8)	2.63 (1.12)
10. All community pharmacists should pay attention to COVID-19-related pharmaceutical services.	2 (0.6)	5 (1.5)	44 (13.0)	110 (32.4)	178 (52.5)	4.35 (0.81)

Telepharmacy, which involves virtual consultations over video, has become an effective tool in remote pharmacy practice and allows pharmacists to communicate with their patients during the COVID-19 pandemic.[28-30] Results from other studies have shown that both patients and pharmacists hold positive views regarding the use of telepharmacy.[29,31,32] Due to the rapid spread of COVID-19 in community settings, some pharmacists expressed concerns about contracting the disease and potentially transmitting it to others, especially their children and family members.[33-35] Our study revealed that approximately 77% of the respondents expressed worry about contracting COVID-19 while working, which was higher than the rate reported in another study conducted in Jordan, Saudi Arabia, and Lebanon, where 43.6% of pharmacists expressed worry or extreme concern about getting infected with COVID-19.[34] To improve access to pharmaceutical care services and reduce the anxiety levels of community pharmacists, it is important for relevant agencies such as the Public Health Ministry to promote telepharmacy in community pharmacies.

In community pharmacies, it was not only ATKs and preventive devices that were in high demand during the COVID-19 pandemic, but also dietary supplements and herbal products that were sought as immune boosters. Supplements such as zinc, vitamin C, vitamin D, garlic (Allium sativum), cinnamon, ginger, honey, and traditional Chinese medicine have all been consumed to prevent COVID-19 infection, relieving COVID-related symptoms, and improving overall quality of life.[18,36-39] In Thailand, Andrographis paniculata extract has been used and recommended for patients with asymptomatic COVID-19 who did not receive antivirals.[5]

Potential barriers and attitudes towards providing pharmacists' services related to COVID-19 infection

Some community pharmacists expressed concerns about shortages of preventive devices and price increases imposed by pharmaceutical wholesalers.[40,41] During the early phase of the pandemic, the price of sanitizer products (alcohol-based hand rub) and face masks surged by 50-100% or more compared to their usual prices.[42]

In the current study, a majority of respondents agreed that the information support provided by relevant agencies regarding COVID-19 was insufficient. A study conducted in Kosovo revealed that more than half of community pharmacists felt the need for additional training related to COVID-19 to better handle the challenges caused by the pandemic.[41] Training community pharmacists in COVID-19 infection could enhance pharmacy services during the pandemic and the provision of COVID-related information to the public.[40] Therefore, it is crucial to create specialized training courses and ensure the availability of reliable information about COVID-19 from authorized agencies for community pharmacists.

Limitation of the study

When interpreting the study findings, there are some points to consider. Initially, it is important to note that the response rate among community pharmacists was comparatively low. Nevertheless, the robustness of the results remained unaffected despite the low response rate. The minimum required sample size was attained during the study. The self-administered online questionnaire was used to collect the data. As a result, older pharmacists and individuals with limited computer literacy and inadequate internet access were consequently limited to participate.

CONCLUSION

Our findings revealed good practices among Thai community

pharmacists on preventive measures for COVID-19 infection, providing pharmaceutical care and advice about COVID-19 treatment and vaccination, and managing medical supplies. Overall attitudes towards providing COVID-related counseling were positive. However, concerns about contracting COVID-19 while working, the price increases of preventive supplies, and consumers' fears about the COVID-19 pandemic were barriers to providing care during the pandemic. Health authorities should provide information support and develop training programs about COVID-19 to improve the quality of pharmacy service.

DECLARATION OF INTEREST

No conflicts of interest.

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AUTHORS CONTRIBUTION

Conceptualization and supervision: NJ, Data collection, data curation and formal analysis: DP and TN, Writing – original draft: KW, Writing – review and editing: KW and NJ. All authors read and approved the final manuscript.

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